

AMENDMENTS TO THE CLAIMS

The listing of claims below replaces all prior versions of claims in the application.

1. (Currently Amended): An active tube, comprising;

a working channel tube inside of which is used as a working channel;

an SMA coil arranged along said working channel tube a bending mechanism to support said working channel tube and to bend said working channel tube;

one or more circular weights attached on an outer surface of said ~~working channel tube~~
~~and said SMA coil~~ bending mechanism; and

an outer skin tube covering said outer surface of said ~~weight including said working channel tube and said SMA coil~~ bending mechanism together with said weights,

wherein said bending mechanism comprises:

an SMA coil;

a pair of links attached at an interval to said working channel tube; and

an outer skin contact to said pair of links and covering said working channel tube,

wherein a first space is formed by said working channel tube, said outer skin, and said pair of links,

wherein said SMA coil is arranged in a longitudinal direction of said working channel tube in said first space,

wherein the outer skin tube has a plurality of constrictions, and said circular weights are built in said constrictions, and

wherein a second space is formed between said outer skin tube and said outer skin.

2. (Currently Amended): An active tube, comprising a tip; and

a main tube connected to said tip, and

said tip comprises:

a working channel tube connected through to said main tube;

a bending mechanism to support said working channel tube and to bend said working channel tube;

one or more circular weights attached on an outer surface of said bending mechanism;

and

an outer skin tube covering said outer surface of said bending mechanism together with said weight, and

wherein said bending mechanism ~~includes an SMA coil arranged in a longitudinal direction of said working channel tube, and~~ comprises:

a pair of links attached to an interval to said working channel tube; and

an outer skin contacted to said pair of links and covering said working channel tube,

wherein a first space is formed by said working channel tube, said outer skin, and said pair of links,

wherein said SMA coil is arranged in a longitudinal direction of said working channel tube in said first space,

wherein the outer skin tube has a plurality of constrictions, and said circular weights are built in said constrictions, and
wherein a second space is formed between said outer skin tube and said outer skin.

3. (Currently amended): The active tube as set forth in Claim 2, wherein[[],] on a front end side of said main tube, a cylindrical thin film inflatably covers an outer surface of said main tube, and

wherein said main tube is provided with a balloon inflating channel along an axis of said main tube to supply gas or liquid into a space between said main tube and said thin film, thereby said thin film is inflated to form a balloon.

4. (Currently Amended): The active tube as set forth in any one of [[Claim]] Claims 1 and 2, wherein an endoscope is inserted into said working channel tube of said tip.

5. (Currently Amended): The active tube as set forth in any one of [[Claim]] Claims 1 and 2, wherein said endoscope is built in said tip.

6. (Cancelled)

7. (Currently Amended): The active tube as set forth in ~~any one of Claims 4 and~~ Claim 5, wherein a front end of said endoscope is provided with an image input part comprising:

an optical fiber or an image pickup device[[:]] ; and

a light guide for illumination or LED to illuminate forward of said image input part.

8. (Cancelled)

9. (Currently Amended): The active tube as set forth in ~~Claim 8~~ any one of Claims 1 and 2, wherein[[:]] said links have small diameter holes, and

wherein said SMA coil is inserted through a first small diameter hole of a behind link and a first small diameter hole of a front link, bent back at a front end of said front link, inserted through a second small diameter hole of said front link and a second small diameter hole of said behind link, and [[:]] wired.

10. (Cancelled)

11. (Currently Amended): The active tube as set forth in ~~Claim 8~~ any one of Claims 1 and 2, wherein a plurality of said SMA coils are provided at equal intervals with respect to a central axis of said working channel tube between said pair of links.

12. (Currently Amended): The active tube as set forth in Claim 2, wherein[[:]] said main tube is provided along an axis of said main tube with a working channel connected through to

said working channel tube and a wiring channel to insert a wire to be connected to said SMA coil of said bending mechanism.

13. (Currently Amended): An active tube system, comprising:
- active tube[[],];
 - a control box to control a bending mechanism of said active tube[[],]; [[and]]
 - a control input part to input control information for said bending mechanism to said control box; and
 - said active tube comprises a tip and a main tube connected to said tip; ~~and wherein~~ wherein said tip of said active tube is provided with;
 - a working channel tube connected through to said main tube;
 - a bending mechanism to support said working channel tube and bend said working channel tube;
 - one or more circular weights attached to an outer surface of said bending mechanism; and
 - an outer skin tube covering said outer surface of said bending mechanism together with said weight[[]; and]],
 - wherein said bending mechanism ~~includes~~ comprises: an SMA coil ~~arranged in a longitudinal direction of said working channel tube, and;~~
 - a pair of links attached to an interval to said working channel tube; and
 - an outer skin contacted to said pair of links and covering said working channel tube,

wherein a first space is formed by said working channel tube, said outer skin, and said pari of links,

wherein said SMA coil is arranged in a longitudinal direction of said working channel tube in said first space,

wherein the outer skin tube has a plurality of constrictions, and said circular weights are built in said constrictions, and

wherein a second space is formed between said outer skin tube and said outer skin.

14. (Currently amended): The active tube system as set forth in Claim 13, wherein[[.]] on a front end side of said main tube, a cylindrical thin film inflatably covers an outer surface of said main tube; and

wherein said main tube is provided with a balloon inflating channel along an axis of said main tube to supply gas or liquid into a space between said main tube and said thin film, thereby said thin film is inflated to form a balloon.

15. (Original): The active tube system as set forth in Claim 13, wherein an endoscope is inserted into said working channel tube of said tip.

16. (Original): The active tube system as set forth in Claim 13, wherein said endoscope is built in said tip.

17. (Cancelled)

18. (Previously Presented): The active tube system as set forth in any one of Claims 15 and 16, wherein a front end of said endoscope is provided with an image input part comprising; an optical fiber or an image pickup device, and a light guide or LED for illumination to illuminate forward of said image input part.

19. (Cancelled)

20. (Currently Amended): The active tube system as set forth in Claim [[19]] 13, wherein: said links have small diameter holes, and said SMA coil is inserted through a first small diameter hole of a behind link and a first small diameter hole of a front link, bent back at a front end of said front link, inserted through a second small diameter hole of said front link and a second small diameter hole of said behind link, and [[is]] wired.

21. (Cancelled)

22. (Currently Amended): The active tube system as set forth in Claim [[19]] 13, wherein a plurality of said SMA coils are provided at equal intervals with respect to a central axis of said working channel tube between said pair of links.

23. (Previously Presented): The active tube system as set forth in Claim 13, wherein;
said main tube is provided along an axis of said main tube with;
a working channel connected through to said working channel tube; and
a wiring channel to insert a wire to be connected to said SMA coil of said bending mechanism.

24. (Previously Presented): The active tube system as set forth in Claim 13, wherein;
said control input part has a control stick with a formed grip and said control stick is provided with a slide type operational mechanism which can be grabbed with a palm.

25. (New): The active tube as set forth in Claim 4, wherein a front end of said endoscope is provided with an image input part comprising:
an optical fiber or an image pickup device; and
a light guide for illumination or LED to illuminate forward of said image input part.